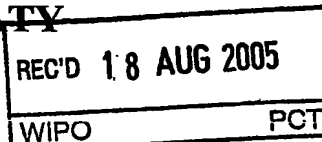


# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty) (PCT Article 36 and Rule 70)



Applicant's or agent's file reference PTGF-04041	<b>FOR FURTHER ACTION</b>	See Form PCT/IPEA/416
International application No. PCT/JP2004/013082	International filing date (day/month/year) 01.09.2004	Priority date (day/month/year) 16.09.2003
International Patent Classification (IPC) or national classification and IPC Int.Cl. <sup>7</sup> H01L33/00		
Applicant TOYODA GOSEI CO., LTD.		

<ol style="list-style-type: none"> <li>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</li> <li>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</li> <li>3. This report is also accompanied by ANNEXES, comprising: <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> a total of _____ sheets, as follows: <div style="margin-left: 20px;"> <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <div style="margin-left: 20px;"> <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. </div> </div> </li> <li>b. <input type="checkbox"/> a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</li> </ol> </li> </ol>																								
<p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 15%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand 14.01.2005	Date of completion of this report 01.08.2005				
Name and mailing address of the IPEA/JP  <b>Japan Patent Office</b> 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 70%;">Authorized officer  Kazuyo KADOTA</td> <td style="width: 30%; text-align: center; border: 1px solid black;">2K 3412</td> </tr> <tr> <td colspan="2">Telephone No. +81-3-3581-1101 Ext. 3255</td> </tr> </table>	Authorized officer  Kazuyo KADOTA	2K 3412	Telephone No. +81-3-3581-1101 Ext. 3255	
Authorized officer  Kazuyo KADOTA	2K 3412				
Telephone No. +81-3-3581-1101 Ext. 3255					

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/013082

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished

- ☐ the description:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ the drawings:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (specify): \_\_\_\_\_

☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (specify): \_\_\_\_\_

☐ any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-10</u>	YES
	Claims	_____	NO
Inventive step (IS)	Claims	<u>1-10</u>	YES
	Claims	_____	NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims	_____	NO

**2. Citations and explanations(Rule 70.7)**

The following documents have been considered for the purpose of this report:

D1 = WO 2000/059046 A1,  
 D2 = EP 0732754 A2,  
 D3 = JP 2003-115610 A

**1. Novelty and inventive step**

The document 1 is considered to represent the closest prior art for the subject matter of claim 1. Document 1 discloses a nitride semiconductor device, which includes a p-cladding layer, a low-doped p-type layer doped with a low concentration of p-type impurity, and a high doped p-contact layer doped with a high concentration of p-type impurity.

Document 2 discloses a group III nitride compound semiconductor light-emitting device, which includes a clad layer having an Mg concentration of  $1 \times 10^{20}/\text{cm}^3$ , a second contact layer having an Mg concentration of  $1 \times 10^{20}/\text{cm}^3$ , and a first contact layer having an Mg concentration of  $2 \times 10^{20}/\text{cm}^3$ .

Document 3 discloses a nitride semiconductor device which includes a Mg-doped GaN/Si-doped GaN modulated doped p-sided contact layer for the improvement of ESD (Electrostatic discharge) tolerance.

However, the subject matter of claim 1 is neither disclosed in any of the documents (D1-D3) nor obvious to a person skilled in the art.

Claims 2-10 are dependent on claim 1 and as such also meet the requirements with respect to novelty and inventive step.

**2. Industrial applicability**

All claims are considered to be industrially applicable.